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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,689	06/26/2003	Hidetoshi Ohnuma	SON-2769	2872

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EXAMINER	
CHACKO DAVIS, DABORAH	
ART UNIT	PAPER NUMBER
1756	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/603,689	OHNUMA, HIDETOSHI	
	Examiner	Art Unit	
	Daborah Chacko-Davis	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *an RCE on 27 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> ((a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 21-30, are rejected under 35 U.S.C. 102(a) as being anticipated by U. S. Patent Application Publication No. 2001/0055733 (Irie et al., hereinafter referred to as Irie).

Irie, in the abstract, in [0013], [0015], [0022], [0048], [0060], [0086], [0088], [0089], [0090], [0091], [0099], [0100], [0116], [0117], [0129], [0155], [0156], [0157], [0158], and in figures 2B, 4, and 6, discloses a method of projecting a desired pattern (photolithography) on a device substrate (wafer) using a reflective mask (reticle for use in the EUV exposure region) comprising providing reticles (master reticles R1....RN) each having pattern elements (mark elements) with mark elements aligned in the X-direction (125X, reticle with mark elements horizontal to the projection vector is same as the H-line reflective mask), and mark elements aligned in the Y-direction perpendicular to the projection vector (reticle with 125Y mark elements is same as the V-line mask), wherein the reticle is rotated by rotational means (main control system) so as to align the corresponding mark elements (either mark element in the X-direction or

mark element in the Y-direction) in the Z-direction (projection vector, best focus position), and perform sequential exposures (X-direction elements i.e., H-line mask rotated about 90 degree to align in the projection beam, and then irradiated, followed by the Y-direction elements i.e., Y-line mask rotated about 90 degree to align with the projection beam, performing plural exposures) through the respective reticles, and forming the desired pattern on the substrate (reference 4) (claims 21-23). Irie, in [0022], [0062], [0072], and [0088], and in figures 2B, 4, and 6, discloses that the reticle pattern that includes the mark elements formed in the Y-direction (125Y, the V-line mask) has a projection relative to the projection vector (best focus position) corresponds to the scanning direction (first direction) of the optical system (exposure system), and that the reticle that has mark elements in the X-direction i.e., the H-line mask projects light to the wafer in a direction horizontal to the projection vector (a direction other than the first direction) (claims 24-27). Irie, in [0154], [0155], discloses that the exposure light is either a EUV ray or an X-ray (claim 28). Irie, in [0087], discloses that the patterns can be formed on the substrate using an electron beam system (electron beam exposure performed, i.e., the charged particle beam is an electron beam) (claim 29). Irie, in [0092], [0111], [0112], [0113], [0114], [0115], discloses that pattern to be projected onto the wafer during exposure via the reticles (R1 to RN) are provided from the storage device via the main control system, and that the data corresponding to the X-direction elements (H-line mask data, δx) and the data corresponding to the Y-direction elements

(V-line mask data, δy) are prepared by the image data of the computer, and are partitioned longitudinally and laterally (H-line mask and V-line mask) (claim 30).

Response to Arguments

3. Applicant's arguments with respect to claims 21-30 have been considered but are moot in view of the new ground(s) of rejection. The 102(e) rejection of U. S. Patent Application Publication No. 2003/0138742 made in the previous office action (paper no. 20060720) has been withdrawn. However a new ground of rejection has been made over claims 21-30. See paragraph no. 2.

A) Applicant argues that Irie et al., does not disclose a reflective mask.

Irie et al., teaches that the reticles are used in EUV exposures and are therefore reflective masks.

B) Applicant argues that Irie et al., does not teach irradiating light to the claimed mask and projecting the reflected light onto the wafer.

Irie, in figure 4, in [0014], [0015], [0072], [0073], and [00158], discloses that sequential exposures are performed and that the masks (either V-line mask or H-line mask) are irradiated with EUV light and that the patterned beam (is the reflected beam from the reticles) is projected to the wafer.

C) Applicant argues that Irie et al., does not teach that the reticles of Irie et al., are adaptable to reflect light.

See paragraph A).

D) Applicant argues that Irie et al., does not disclose rotating the wafer and another of said V-line and H-line masks.

Irie et al., in [0073], [0074], [0075], [0076], and [0088], discloses that the mark elements are rotated so as to align in the z-direction prior to irradiation (at least 90 degrees of rotation). Irie, in [0089], discloses that the substrate stage is in a constant speed motion i.e., the substrate will also be in motion (rotation) because the substrate is fixed to the substrate stage (rotated at least 90 degrees, i.e., rotated from x-direction to Y-direction and vice versa).

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

January 5, 2007.

MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700